REMARKS

Claims 1-26 are pending in the application. Claim 4 and 5 are objected to because of informalities. Claims have been rejected under 35 U.S.C. §103(a) as being deemed unpatentable over U.S. Patent Publication No. 2003/0014544 (Petty) in view of U.S. Patent Publication No. 2004/0013117 (Hendel) and U.S. Patent Publication No. 2003/0217231 (Seidl et al.). Of the Claims, Claims 1, 10, 14 and 18 are independent. Claims have been amended to clarify the Applicants' claimed invention. The application as amended and argued herein, is believed to overcome the rejections.

Regarding Claim Objections

Claim 4 has been objected to because the sentence structure "wherein said performing one or more operations" does not make clear what applicant is trying to convey. Applicants have amended Claim 4 to insert "TCP-A driver" between the words "said" and "performing". Removal of the objection to Claim 4 is respectfully requested.

Claim 5 is objected to because it recites the exact limitations of Claim 4. Claim 5 has been canceled.

Regarding Rejections under 35 U.S.C. § 103(a)

Claims 1-2, 6-12, 14-16, 18-19 and 23-26 have been rejected under 35 U.S.C. §103(a) as being deemed unpatentable over U.S. Patent Publication No. 2003/0014544 (Pettey) in view of U.S. Patent Publication No. 2004/0013117 (Hendel).

Claims 13, 17 and 20 have been rejected under 35 U.S.C. §103(a) as being deemed unpatentable over U.S. Patent Publication No. 2003/0014544 (Pettey) in view of U.S. Patent Publication No. 2004/0013117 (Hendel) as applied to Claims 12, 16 and 19 above, and further in view of U.S. Patent Publication No. 2003/0217231. (Seidl et al.).

Cited reference, Pettey discusses offloading TCP/IP processing to an Infiniband Architecture (IBA) Host Channel Adapter (HCA). (*See* Fig. 4, 418; Fig. 5, 502).

Cited reference, Hendel discusses performing TCP protocol processing in a communications interface, for example a Network Interface Card (NIC).

Cited reference, Siedl discusses a system for prefetching objects into an object cache by using references within a first object to prefetch a second object into a cache memory. (*See*, Abstract.)

To establish a prima facie case for obviousness under 35 U.S.C. 103(a), (1) there must be some suggestion or motivation to combine reference teachings; (2) there must be a reasonable expectation of success; (3) the references when combined must teach or suggest all the claim limitations. For the reasons discussed below, it is respectfully submitted that the Office has not established a prima facie case under 35 U.S.C. 103(a) for claims 1-4 and 6-26 and that therefore, claims 1-4 and 6-26 are allowable.

The references when combined do not teach or suggest all the claim limitations

Hendel does not teach or suggest at least:

> "a TCP-A driver performing TCP stack processing by parsing a header in at least one of the one or more packets to determine the protocol context associated with a current connection, and performing TCP protocol compliance for the at least one of the one or more packets;"
>
> as claimed by the Applicants in Claim 1 (as amended.)

As shown in Fig. 1 of Hendel, the communications interface 110 performs TCP processing of received packets as discussed in conjunction with Fig. 3, prior to sending the headers and payload to the host 140, 150.

For example, paragraph [0010] of Hendel recites:

[0010] In this embodiment, when a packet is received at the communication interface, its communication connection is identified, its payload is delineated and a sequence number (e.g., a TCP sequence number) of the payload is determined. **From per-connection data stored on the interface, an anchor sequence number and anchor buffer identifier are retrieved.** The anchor sequence number is a sequence number associated with the beginning of a receive translation window for the connection, while the anchor buffer identifier identifies a host buffer encompassing the anchor sequence number. The connection data may also include a circular list of host buffers for receiving connection payloads, states of those buffers (e.g., to indicate whether they are available), the length of the buffer list, a size of the buffers, etc.

As shown in Fig. 3 of Hendel, the connection data 112 for TCP connections is maintained by the communication interface 110 as discussed in paragraphs [0031] and [0032]:

"[0031] Communication interface 110 may be configured to receive IP (Internet Protocol) packets from a network, and send layer four (e.g., TCP) packet payloads to the hosts for consumption. Although configured for TCP/IP traffic in one embodiment of the invention (e.g., wherein the network may be the Internet), other embodiments may be configured for other protocols.

[0032] Communication interface 110 includes **a set of connection data 112 for each connection** for which it transfers payloads to host memory via DMA. A set of connection data 112 may comprise a table, a database or some other data structure. Illustratively, each connection's set of data identifies a host to receive connection payloads, one or more host buffers in which to store the data, and information for identifying a buffer location in which to store a particular payload."

Thus, Hendel merely discusses offloading TCP/IP processing to a communications interface as discussed in the background of the Applicants' specification. In contrast, in the applicants' claimed invention, a TCP-A driver separate from the network component performs TCP stack processing.

The TCP-A driver performs TCP stack processing **"by parsing a header to determine the connection context associated with a current connection, and performing TCP protocol compliance"** upon receiving a notification from the network component. (*See,* for example, Fig. 2, network component 212, TCP-A driver 222.)

As discussed in paragraph [0025] of the Applicants' specification:

"[0025] At block 306, TCP-A driver 222 may perform packet processing for at least one of the one or more packets. Packet processing may be performed by the **TCP-A driver** 222 retrieving header 230 from post buffer 214A, **parsing the header 230 to determine the protocol context associated with the current connection, and performing TCP protocol compliance.** TCP protocol compliance may comprise, for example, verifying the sequence number of a received packet to ensure that the packet is within a range of numbers that was agreed upon between the communicating nodes; verifying the payload size to ensure that the packet is within a range of sizes that was agreed upon between the communicating nodes; ensuring that the header structure conforms to the protocol; and ensuring that the timestamps are within an expected time range."

The IBA HCA discussed by Petty performs a similar function to a NIC and offloads transport, network routing and data link layer services from the processor. (*See* paragraph [0081].) The server includes a connection acceleration driver 550 (Fig. 5), 417 (Fig. 4) that interprets commands received from TCP/IP-based applications. As recited in paragraph [0081] of Petty:

> "Within an IBA environment, the HCAs 418 serve the function of interfacing the servers 410 to the Infiniband fabric 406, very much like the role played by network interface cards within a TCP/IP local area network environment. But in contrast to devices providing access to a TCP/IP-based local area network, the **HCAs 418 within an IBA-based I/O subsystem are entirely responsible for performing transport services and network routing services, as well as data link layer services.**" (Petty, [0081])

Thus, the combination of Hendel, Pettey and Siedl merely discusses offloading TCP protocol processing to a TCP/IP Offload Engine (TOE) as discussed in the background of the applicants' specification.

Claims 2-4 and 6-9 are dependent claims that depend directly or indirectly on claim 1, which has been shown to be non-obvious over the cited reference.

Independent claims 10, 14 and 18 recite a like distinction and are thus non-obvious over the cited references. Claims 11-13 depend directly or indirectly on claim 10, claims 15-17 depend directly or indirectly on claim 14 and claims 19-26 depend directly or indirectly on claim 18 and are thus non-obvious over the cited references.

Furthermore Seidl fails to disclose or suggest at least:

> "TCP-A driver is additionally capable of fetching a next header of the one or more headers prior to completing the processing of the current header"

as claimed by the Applicants in Claim 13.

The Office cites paragraph [0017] of Seidl which recites

> "In a variation on this embodiment, if the first cache line contains only a portion of the first object, the system prefetches another portion of the first object. Note that this may involve prefetching a header for the first object."

as teaching the Applicants' claimed:

> "TCP-A driver is additionally capable of fetching a next header of the one or more headers prior to completing the processing of the current header"

Seidl's discussion of "prefetching a header for the first object" merely discusses how portions of the first object are fetched and does not teach or suggest the Applicants' claimed "next header of the one or more headers".

Accordingly, the present invention as now claimed is believed to be non-obvious over the cited references. Removal of the rejections under 35 U.S.C. § 103(a) and acceptance of claims 1-4 and 6-26 is respectfully requested.

CONCLUSION

Applicants are herewith submitting an IDS. It is respectfully requested that the Examiner consider and make of record in the subject application the information cited in this IDS.

In view of the foregoing, it is submitted that all claims (claims 1-4 and 6-26) are in condition of allowance. The Examiner is respectfully requested to contact the undersigned by telephone if such contact would further the examination of the above-referenced application.

Please charge any shortages and credit any overcharges to Deposit Account Number 50-4238.

Respectfully submitted,

Customer Number: 59796

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